ACCIDENTAL AESTHETICS

THE AESTHETICS OF A ZERO WASTE FASHION DESIGN PROCESS

SAARA JOLKKONEN

Master's Thesis
Fashion & Collection Design
Department of Design
Aalto University
2016

Aalto University
School of Arts, Design
and Architecture

Aalto University, P.O. BOX 11000, 00076 AALTO
www.aalto.fi

Master of Arts thesis abstract

Author Saara Jolkkonen

Title of thesis Accidental Aesthetics. The Aesthetics of a Zero Waste Fashion Design Process

Department Department of Design

Degree programme Fashion & Collection design

Year 2016 **Number of pages** 83 **Language** English

Abstract

This thesis examines the aesthetics of a zero waste fashion design process through the author's creative work. The objective is to study the aesthetics of a design process and the role of accidents in the design. The thesis is divided into two parts. The first part covers the history of zero waste fashion design and previous research in the field, as well as aesthetics in clothing and creative design processes. The second part contains the author's design process and the production phase.

Zero waste fashion design has gained reputation as a sustainable design practice, but its conceptual and creative aspects have not been studied in depth. This study sheds light on the less-known conceptual and creative side of the practice. What is the role of aesthetics in a design process that is at least partially coincidental? Can accidents be used as a design tool and what value can this bring to the process and the garments? What value and significance does the design process itself have? Zero waste fashion design is not yet very widely known and this study is the first master's thesis on the subject in Finland.

Literature analysis and interviews have been used to form the research background of this thesis. The production phase was guided by the author's creative work and the observation and analyzing of the process. The results of this thesis are the observations of aesthetics in the author's design process and the 12 resulting garments. The design process was carefully documented with the use of a process diary, photography and recording.

The design process and the garments were exhibited in gallery Kalleria from the 4th to 28th of February 2016 as a part of an exhibition titled *Tekemisen arvoista*.

Keywords zero waste fashion design, sustainable fashion, aesthetics, creative process

Aalto-yliopisto
Taiteiden ja suunnittelun korkeakoulu

Aalto-yliopisto, PL 11000, 00076 AALTO
www.aalto.fi

Taiteen maisterin opinnäytteen tiivistelmä

Tekijä Saara Jolkkonen

Työn nimi Accidental Aesthetics. The Aesthetics of a Zero Waste Fashion Design Process

Laitos Muotoilun laitos

Koulutusohjelma Fashion & Collection Design

Vuosi 2016 **Sivumäärä** 83 **Kieli** englanti

Tiivistelmä

Tässä opinnäytetyössä tutkitaan nollajätesuunnitteluprosessin estetiikkaa tekijän luovan työskentelyn kautta. Tarkoitus on tutkia suunnitteluprosessin estetiikkaa sekä sattuman roolia suunnittelussa. Työ on jaettu kahteen osaan. Ensimmäisessä osassa taustoitetaan nollajätemetodin historiaa ja aikaisempia tutkimuksia, sekä perehdytään vaatetuksen ja luovan suunnittelutyön estetiikkaan. Toinen osa koostuu suunnitteluprosessista ja produktio-osuudesta.

Nollajätesuunnittelu tai nollajätemetodi on tunnettu kestävän kehityksen suunnittelusuuntauksena, mutta sen konseptuaalista ja luovaa puolta ei ole tutkittu syvemmin. Tämä tutkimus valottaa suunnittelutavan konseptuaalista ja luovaa puolta. Mikä rooli on estetiikalla ainakin osittain sattumanvaraisessa suunnitteluprosessissa? Voiko sattumia käyttää suunnitteluvälineinä ja mitä arvoa ne voivat tuoda suunnitteluun ja vaatteisiin? Mitä arvoa ja tarkoituksellisuutta on suunnitteluprosessissa itsessään? Nollajätesuunnittelu ei ole vielä kovin tunnettua, ja työ on ensimmäinen Suomessa tehty maisterin opinnäytetyö aiheesta.

Taustatutkimus on tehty kirjallisen analyysin ja haastattelujen avulla. Produktio-osaa on ohjannut oma luova työskentely ja prosessin havainnointi sekä analysointi. Suunnitteluprosessi dokumentoitiin tarkasti prosessipäiväkirjan, valokuvauksen ja äänittämisen avulla. Työn lopputuloksena on havainnot tekijän suunnitteluprosessin estetiikasta sekä 12 vaatetta.

Suunnitteluprosessi ja vaatteet olivat näytillä galleria Kalleriassa 4.-27.2.2016 osana näyttelyä nimeltä *Tekemisen arvoista*.

Avainsanat nollajätesuunnittelu, zero waste fashion design, kestävä muoti, estetiikka, luova suunnitteluprosessi

TABLE OF CONTENTS

PART 2
PRODUCTION

INTRODUCTION

"The righter you do the wrong thing, the wronger you get"
-Russell Ackoff (Ackoff 2004)

"This is the end of fashion as we know it ---
And maybe from these ashes another system will be born"
-Li Endelkoort (Dezeen 2015)

Fashion is in crisis. Our planet is finite, and the fashion industry is one of the biggest polluters of our time (Niinimäki 2013; 14). The rise of fast fashion has distorted the markets to value only the fast and the cheap at the expense of workers' safety, the environment and even human lives (Parker 2015; 210). New models on how to design, buy, wear and care for clothing are needed. Sustainable and ethical values should be in the DNA of every young designer of today. Looking away does not make the problems disappear. Making things slightly better is not enough; fashion needs systemic change.

Sustainable fashion carries the stigma of not being true, cutting-edge fashion. We still talk about sustainable fashion as something separate from traditional fashion, as if producing something with sustainable practices would tell us anything about the appearance of the object. This segregation maintains the notion that sustainably designed and produced garments somehow hold less value than garments produced in what we currently perceive as the traditional, conventional or normal way. Nothing is more certain than change, and status quos change over time. We as creators of fashion should embrace change for the better.

Zero waste fashion design (ZWFD) is a design practice which aims to eliminate pre-consumer cut-off waste from the production phase. The designing happens simultaneously with the designing of the pattern pieces, and thus the ZWFD process differs greatly from the conventional design process. With ZWFD, the designer cannot know what the final result will be when they start the process, at least without making the process exceedingly difficult (McQuillan,2011; 93). But if the designer stays open-minded, the process itself can take the designs to a completely new place, somewhere you never even thought existed. But what does this mean when it comes to aesthetics? If some features cannot be designed in advance, but are develop coincidentally during the process, where are the aesthetic decisions made? What is the role of the designer in a design process that is at least partially coincidental? These are the questions I wish to answer with this thesis.

I started practicing zero waste fashion design (ZWFD) in 2011. At the time it was a way to make my design practice more sustainable and thus justify my career choice. My viewpoint changed as I gained more experience and knowledge on the matter. I started to see ZWFD first and foremost as a creative way of designing and creating, not only as a sustainable design practice. Ironically, I've found the ZWFD design processes I've gone through to be uncomfortable, even stressful events. This has made me ask myself why I still very obsessively want to practise ZWFD. Why do I find the design process so fascinating? Wouldn't it be easier to just sketch and design in a conventional manner? I find that sketching often results in models and shapes that I have already seen. As stressful as not knowing where the ZWFD process could take you might be, every design process is an adventure, a plunge into the unknown. In ZWFD, I find beauty and excitement in the design process itself.

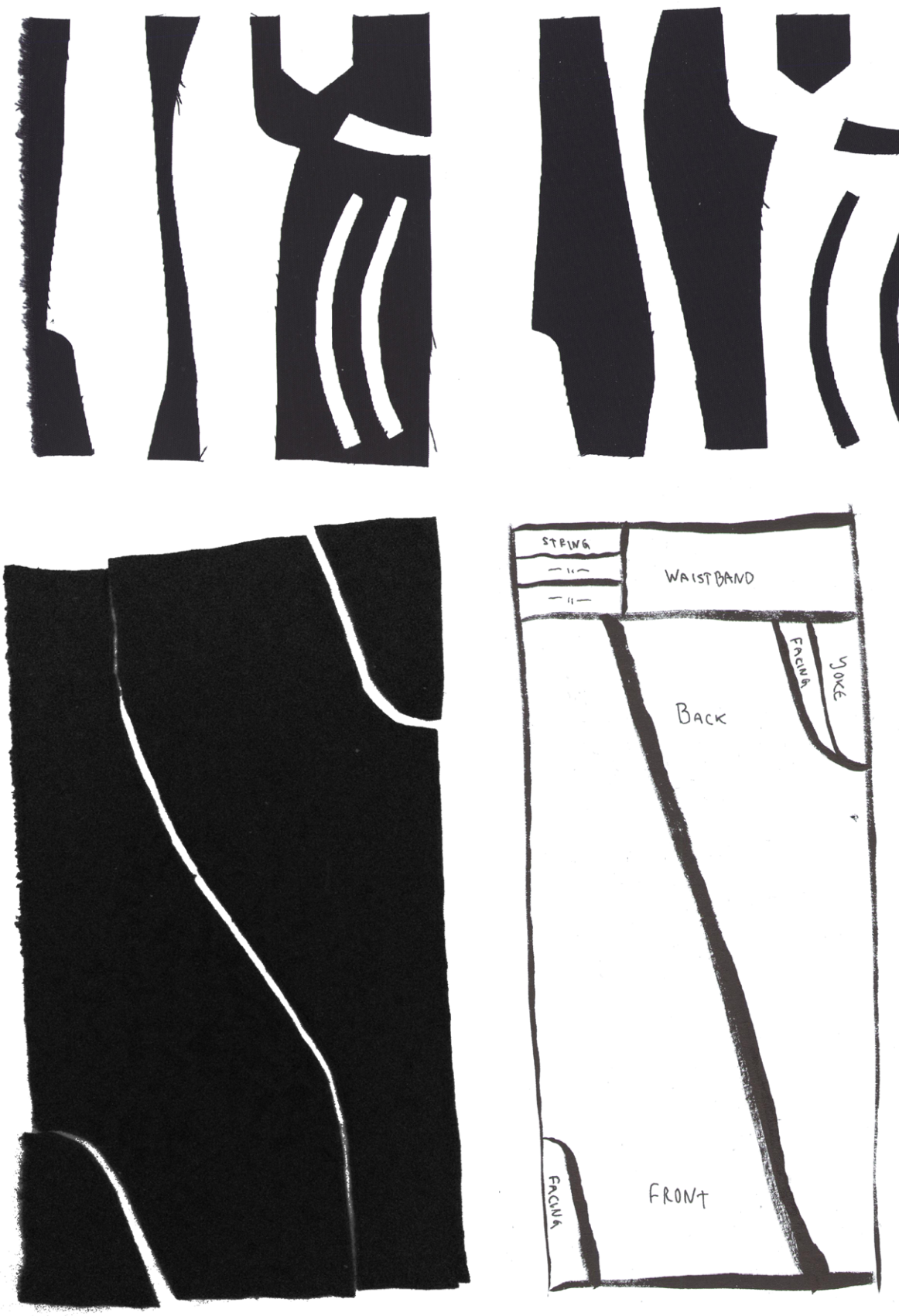
Sustainability and my values are the basis of my work, but not the subject of this study. Through this thesis I wish to further spread knowledge of the less covered

creative side of ZWFD and also understand my own design process better and open that process up to others. I have never been taught ZWFD. I've learned about the theory through books and the internet, but I had to teach myself the practical side through trial and error. Because I work by myself, it has become hard for me to describe my design process to other people who do not necessarily understand the nature of ZWFD. I want to use this thesis to provide a conceptual example of working with ZWFD and to study the aesthetics of my own creative design process. Although every designer's process is different, and solid generalizations about ZWFD can't be made on the basis of just one design process, I hope that this study will broaden people's perception of ZWFD and help them understand the vast possibilities of the practice.

RESEARCH METHODS

This study is conducted with qualitative design research. The first part covers the background and foreknowledge for this thesis in the areas of zero waste fashion design, aesthetics of a design process and zero waste fashion design in relation to aesthetics. These topics are researched through literature reviews. The two leading experts on ZWFD, Timo Rissanen and Holly McQuillan, are also interviewed.

The second part of the thesis consists of my personal design process, which will be studied with practice-led design research. This method of research can be described as *"the process of autobiographical inquiry into one's own practice"* (Nimkulrat 2015). The research has been conducted by observing and reflecting on the design process. Photography, audio recordings and a design diary were also used to document and analyse the process. The goal is to discover where the aesthetics decisions are made in an experimental, conceptual ZWFD process, and whether or not the process itself is an aesthetic experience and what makes it such. I also seek to discover what role uncertainty and accidents can have in a design process and what value they could bring to the design.



2. Conventional patterns and cut-off waste, ZWFD patterns

ZERO WASTE FASHION DESIGN

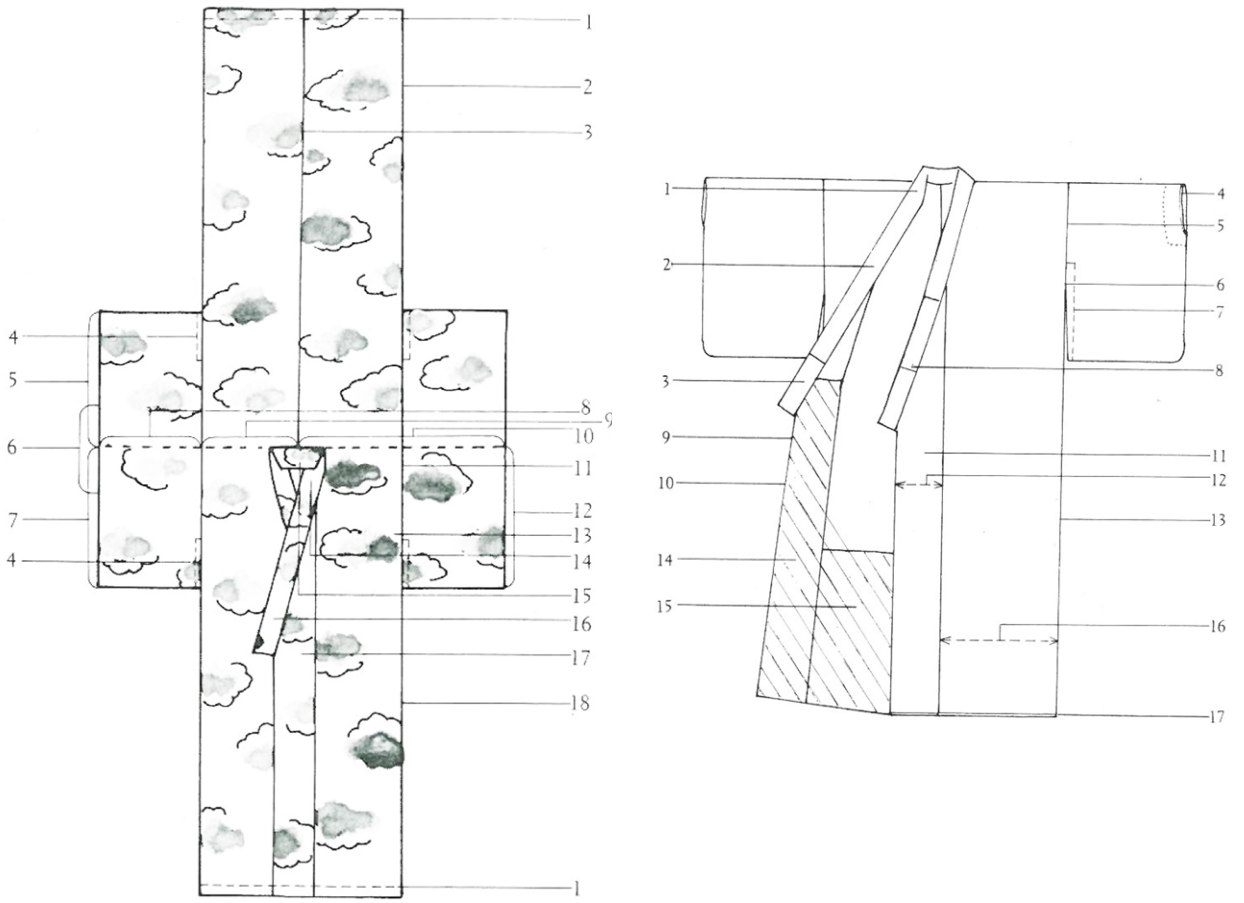
"Being okay with risk is probably the single most important personality trait necessary in order to master zero-waste pattern design"
– Holly McQuillan (Slowfashioned, 2011)

Zero waste fashion design (aka zero waste pattern cutting) is a philosophy, an approach and a practice of fashion design in which pre-consumer cutting waste is eliminated in the design process (Rissanen 2013; 16). There are many design strategies regarding waste in the fashion industry, like creating products from pre-consumer cut-off waste or creating new products from discarded or recycled materials. When referring to zero waste fashion design, or ZWFD, this study refers to a way of designing that eliminates pre-consumer cut-off waste in the design process.

In the apparel industry, approximately 15 % of fabric is wasted as cut-off waste (Rissanen 2013; 18). This means enormous amounts of resources and energy are wasted before the material has even reached the consumer. The waste hierarchy defines prevention as the best way to intervene in waste creation (WtERT). To prevent fabric being cut off, the pattern pieces have to be designed to fit each other like a jigsaw puzzle. Thus, designing and pattern making have to take place simultaneously: they are symbiotic actions, not separate stages of the design process. This requires the designer to have solid experience in pattern making and the ability to understand 2D pattern form in relation to the 3D garment. (Rissanen 2013.)

The idea of utilizing all of the available material is very old, but the modern approach to zero waste differs greatly from that of history. In the old days, all materials were used to the last thread because it took a lot of time, effort and resources to produce precious fabrics (McQuillan 2011; 83). Of course, the situation is no different today: producing fabrics takes a lot of resources, but what is lacking is appreciation for those resources and materials. Producing garments today is cheap and quick, and our economic system is built on constantly increasing consumption. At the moment, the apparel industry exploits both our diminishing resources as well as the work force of the global south countries to answer to the needs and wants of the western consumer. The unfortunate fact is that the resources of this planet are finite. Sooner or later we have to change various paradigms in our culture, such as the way we design, produce and use goods (Thackara 2014; 43). ZWFD is one way to change how we design things on a practical level and to do so in a more sustainable way. As a holistic philosophy, it has a lot to offer.

Many terms are used to refer to the elimination of pre-consumer cut-off waste; zero waste fashion, zero waste pattern cutting, zero waste design method and so on. In this study, I've chosen to use the term zero waste fashion design (ZWFD) to emphasize that it is not only a technique or a practice, but also a philosophy. It is a holistic approach to fashion design that offers a systemic change and alternative to the current practices.



3. Basic kimono patterns

THE HISTORY OF ZERO WASTE CLOTHING

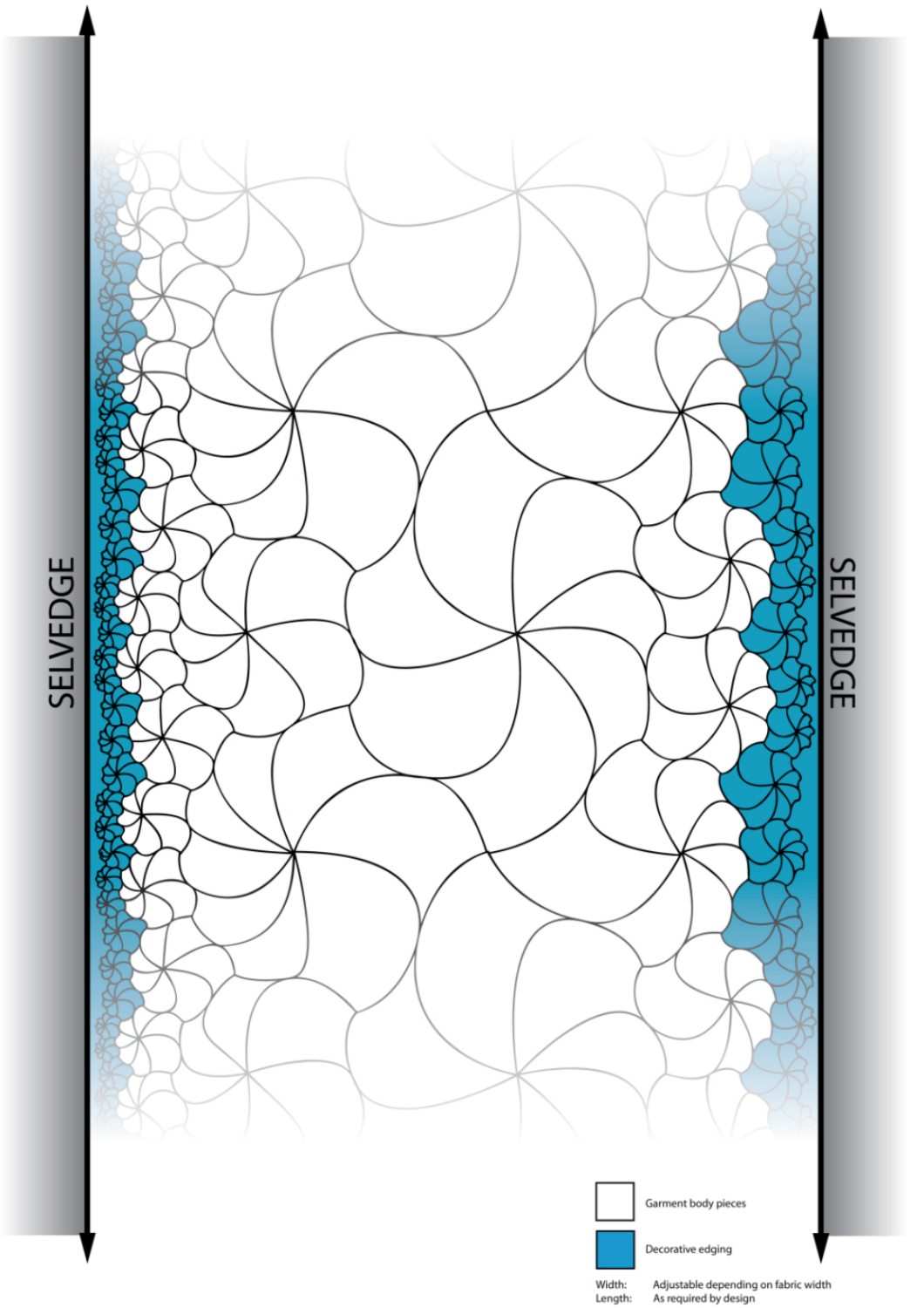
The idea of using all of the available fabric is as old as clothing itself. Before the industrial revolution, producing fabrics took a lot of time, resources and work (McQuillan 2011; 83). The history of clothing is full of examples of material efficiency at its best. One example is the traditional Japanese kimono. The garment is cut according to the width of the fabric in order to utilize it all (Rissanen 2013; 46). The kimonos are designed to have a long life: the pattern pieces can be taken apart and sewn back together in a different order so the fabric will wear evenly (Yamanaka 1982; 42). Much traditional clothing around the world is made with the efficient use of fabric, and the history of clothing is full of examples of zero waste thinking, such as the Indian sari and the Greek chiton (Rissanen, 2013; 61).

MODERN ZERO WASTE FASHION DESIGN

The idea of ZWFD is old, but the term zero waste is fairly new in the context of fashion. Zero waste fashion became a concept around 2008, even though the modern zero waste practice cannot be said to have started at a certain moment (Rissanen 2013; 28). Modern ZWFD is the result of many factors such as a general interest in more sustainable practices and awareness of the harmful nature of the clothing industry and the chain of production it creates. The creative nature of the practice has also influenced its development.

Even before the term was formed, many designers in the 21st century contributed to the development of modern ZWFD. Madeleine Vionnet can be seen as one of the first zero waste thinkers of her time. Instead of sketching on paper, she usually explored the patterns on a small mannequin. Vionnet's famous napkin dress was formed of four almost square pieces of fabric (Rissanen 2013; 51). Some other designers connected with the emergence of ZWFD are Claire McCardell, Zandra Rhodes, Mark Liu and Yeohlee Teng. Issey Miyake's A-POC is also an inspiring example of ZWFD and creative thinking. (Rissanen 2013.)

Today's zero waste fashion was championed by two pioneers: Timo Rissanen and Holly McQuillan. Rissanen is the assistant professor of fashion at Parsons New School of Design (Parsons New School). He published his doctoral dissertation *Zero-Waste Fashion Design: a study at the Intersection of Cloth, Fashion Design and Pattern Cutting* in 2013. McQuillan is a senior lecturer at Massey University in New Zealand (Massey University), and she has done many projects and written many articles on the subject. Rissanen & McQuillan have worked together many times over the years. In February 2016 they published a new book titled *Zero Waste Fashion Design*, but due to the timing of its release it could sadly not be included in this study.



4. Tessellation pattern

PRACTICAL APPROACHES TO ZERO WASTE DESIGN

How does one start a ZWFD process and how does it differ from conventional design? Since the final result cannot be controlled completely, sketching may not be feasible. Holly McQuillan introduces general starting points for ZWFD in her guide titled *Zero Waste Pattern Cutting Process*. According to McQuillan, the most important thing to consider in the beginning is the fabric width, as it determines the space one is working with. Fabric texture, grain line and elasticity also have to be taken into account. McQuillan advises starting by choosing fixed areas in the design and working around them. (McQuillan 2010.)

McQuillan specifies more practical approaches in the article *Zero-waste design practice: Strategies and Risk Taking for Garment Design*. Jigsaw puzzle is a technique in which all the pattern pieces interlock with each other. Tessellation is an approach in which one constructs the garment from mosaic-like pattern pieces: it can be taken apart and rearranged, resulting in a different outcome. Working two (or more) garments into one marker is called embedding. Similarly, in the multiple cloth approach, two or more garments are designed from different fabrics so the designer can combine the patterns in multiple ways. (McQuillan, 2011; 87-95.)

In all these approaches, remaining relatively open to the end result is fundamental to the success of the design, and this openness is indeed part of the very nature of ZWFD.

ZERO WASTE RESEARCH

ZWFD has been a popular topic in sustainable design research in the recent years. Rissanen's doctoral dissertation is the most in-depth analysis of ZWFD and its many aspects in relation to the fashion system. Both Rissanen & McQuillan have written many articles which have been featured in numerous magazines and books. Both also teach courses on the subject.

ZWFD has been the subject of numerous Bachelor's theses in Finland, including Matleena Haukka's *TrashionTrick* (Haukka 2011), Pia Honkanen's *Masculin/Feminin* (Honkanen 2014), Miina Laitsaari's *Zero Waste -vaatteiden suunnittelu "No More Seasons" –tuotemerkille*, Jenni Rosentröm's *Minusta Neliö* (Rosentröm 2013), Liisa Pitkäranta's *Designvaatemallisto Zero Waste Pattern Cutting -menetelmällä* (Pitkäranta 2013), Tiina Tuovinen's *Everything not saved will be Lost: Hukkamateriaalin vähentäminen ja toiminnalliset elementit naisten casual-vaatteen kaavoituksessa*, and the author's *Less Is More; naistenvaatekokoelma nollajätemetodia käyttäen* (Jolkkonen, 2012). For most of the authors mentioned above, the writing of their bachelor's theses and the designing of a clothing collection were their first steps into the world of ZWFD.

Some master's theses in Finland have acknowledged the subject of ZWFD, but it has not been the centre of any. Caroline Obregón briefly touches upon ZWDF in her master's thesis Sustainable Fashion: from Trend to Paradigm?, which addresses ways that fashion designers can help shift the unsustainable current paradigm (Obregón 2012). Anna-Mari Leppisaari briefly introduces ZWFD in her master's thesis Vaatteeksi kudottu, which focuses on material appreciation as the basis for fashion design (Leppisaari 2013).

Even though ZWFD is fairly known in academic fashion research, it is generally still an unknown practice in Finland.

ZERO WASTE FASHION DESIGN AS A PHILOSOPHY

ZWFD is not just a way of designing to save material; it is a holistic way to rethink fashion. It has the potential to fundamentally change the way we perceive fashion, the fashion industry and the role of the designer. The current garment production chain has very distinguished roles and hierarchies. The phases of conventional fashion production go from designing, patternmaking & grading to production and distribution (Rissanen 2008; 190). These phases are segregated and carried out by people with different roles in the chain. This maintains the stereotype of the designer as a creative genius, thus undermining teamwork and the other phases of production. Li Endelkoort has addressed this concern: "We still educate our young people to become catwalk designers; unique individuals, where as this society is now about exchange and the new economy and working together in teams" (Dezeen 2015). Since designing and patternmaking are simultaneous actions in ZWFD, the roles inevitably get mixed and this changes the hierarchies (McQuillan 2011; 85).

The nature of ZWFD is somewhat experimental. Making precise plans and decisions in advance is not feasible, and thus the designer has to be willing to tolerate some degree of uncertainty and unpleasantness. I regard this as a part of the philosophy; ZWFD is also very creative by nature. Also, designing zero waste garments usually takes longer than conventional design methods. This shift in focus is needed to change the current system where fast and cheap are the two most important factors in a garment. We ought to design less, and do so with more care

and thought about future use. Focusing and sacrificing more time on the design process could arguably result in more functional, aesthetic and long-lived garments.

ZWFD is one philosophy and shift towards change. It does not eliminate the countless other problems related to the fashion system which also need to be addressed. ZWFD combined with other ethical and sustainable principles and practices can be the game changers the fashion industry so desperately needs.

CRITICISM

ZWFD has been criticised as resulting in shapeless, baggy clothing and sometimes using more material than conventional design methods (McQuillan 2011; 93). As Rissanen has said, it is easy to make an ugly zero waste garment (Rissanen, TFRC). For a ZWFD designer, or any designer for that matter, aesthetics have to be just as important as sustainable values since there is no point in making an ugly garment. The user values aesthetics and fit more than possible sustainability or ethicality, and thus all aspects must be considered equally (Niinimäki 2011; 168).

I find ZWFD to be very challenging and it takes time and knowledge to master. There are as many styles derived from ZWFD as there are designers practicing it. Designing with ZWFD for the first time, the result will most likely be unflattering or baggy: the mindset of ZWFD will take time to master since it differs so greatly from the conventional and familiar design approach. In my opinion this is a problem that will disappear when enough skilled people practice and develop the method. I think anything is possible to design zero waste if one is open-minded, curious and a skilled enough pattern maker.

INTERVIEWS WITH HOLLY MCQUILLAN AND TIMO RISSANEN

To gain a wider understanding of how other ZWFD designers approach and experience their creative process I interviewed the two leading experts on the subject: Timo Rissanen and Holly McQuillan. The purpose was to find out more about their personal design processes and thoughts on aesthetics in relation to ZWFD.

The interview was semi-structured and planned to be conducted (preferably) face-to-face. I interviewed Rissanen in person on the 30th of July 2015. McQuillan's interview was conducted via email on the 1st of September 2015. The interview questions can be found in appendix.

McQuillan starts her design process by choosing the fabric, garment type and silhouette. Rissanen says the starting point can be anything he finds interesting at that particular moment in time; sometimes he has a very clear concept and sometimes just a feeling or mood.

As far as the aesthetic decisions they make before starting to design, McQuillan mentions silhouette, fabric, colour, drape, texture and also garment type and fit. Rissanen says he usually has an idea of a shape or a silhouette, but that it's hard to even pinpoint the moment where designing starts since even choosing the fabric, for example, is a design action. Both underline the importance of the fabric and its qualities. Both talk about the importance of letting the process contribute to the design, mention that things might change during the process and say that one can't be too fixed on a single idea.

McQuillan uses many different techniques simultaneously whilst designing: *"The design process spans from pencil sketch to stitch and back again"* She mentions using design tools like Illustrator, Gerber Accumark, paper marquettes, half scale toiles, a mannequin and a sewing machine. Rissanen uses draping, paper folding, sketching and sewing as design tools.

I was interested in how they make use of and interpret inspiration in their work. McQuillan says her design process is driven by form and the inherent qualities of the materials, but that product design, architecture and geometry do inspire her. Rissanen says he can get inspiration from anything and that there are multiple ways of doing so.

I asked if they let the design process conduct itself. McQuillan says it depends on the project. Sometimes she has a very clear goal in mind and sometimes she is more experimental. "*It is important for all designers to respond intuitively to what's happening on the stand or on the drawing board or pattern cutting table as this is how we best learn. You have to be taking risks to discover new ways of doing things otherwise you'll stagnate. Then you use this knowledge to inform decisions later."*

I was curious about where aesthetic decisions take place in their design processes. McQuillan feels that aesthetics are present all the time. "*Every line I draw influences aesthetics. Every cut I make, or fabric piece I pin on a mannequin and way I stitch the garment is a design decision that impacts on aesthetics.*" Rissanen agrees, and emphasizes the role of intuition: "*As designers we do have this kind of inner feeling for things. It is important to hear it and trust it.*"

Do ZWFD garments share the same aesthetics? McQuillan thinks they do not, as every designer works differently. "*It is easier to design zero waste garments that are oversized, just like it is easier to use a conventional 3 piece suit block to make a suit, but I don't believe zero waste garments look the same*". Rissanen agrees with McQuillan "*I would say they (ZWFD garments) don't share a certain aesthetic style. I do think it's a question of that sort of a deeper beauty. There is something quite ugly in the amount of waste that we create".*

The term sustainable fashion was discussed. Both McQuillan & Rissanen state that making a garment zero waste does not automatically make it sustainable and argue that designers should adopt many different methods to resolve the environmental and social impacts of their products. McQuillan points out that sustainability is currently a core driver in the high-end brands, but the mass markets are sadly way behind in this shift. *"Sustainability is still a privilege and we need to work on this a lot more."*

After conducting the interviews, I realized that they provided limited insight into my area of interest. Not many designers think about why they make the decisions they make during the design process: it is intuitive and hard to describe or grasp. To fundamentally understand the aesthetic decisions of McQuillan & Rissanen, I'd have to observe their work and be able to ask questions at the same time. However, these interviews gave me perspective on their thoughts, design processes and ZWFD in general. Doing the interviews was a really valuable experience for me since it was the first time I had ever talked to anyone else practicing ZWFD.

AESTHETICS

Philosophical aesthetics was not a familiar subject to me prior to this thesis. In order to understand aesthetics and to reflect upon its concepts, I had to familiarize myself with the subject and how it relates to the concepts of fashion, sustainability and creative processes.

Aesthetics is the philosophy of art, beauty and criticism (Naukkarinen 2012; 15). It is "*a study of certain value based on distinctive experience or properties in objects"* (Stecker 2005; vii). According to Stecker's minimal view on aesthetics, there exists no universal concept from which to access the aesthetics of an object or an experience. However, Stecker defines two recognizable values: the intrinsic value of aesthetic experiences and the features and forms that an object obtains to deliver these experiences (Stecker 2005; 237).

An aesthetic evaluation of fashion is complicated, as fashion touches upon so many areas of our culture, like identity, economics, politics, sociology, art etc. This study explores the aesthetics of the author's design process. It is a process in which aesthetic decisions are made in a coincidental process and accidents contribute to the aesthetics of the process and the designs. The purpose of this thesis is not to study the aesthetics of clothing in general. Nevertheless, the design process is very closely tied to the concept of fashion, so it seems relevant to address this connection.

AESTHETICS & CLOTHING

Ossi Naukkarinen approaches clothes as objects of everyday life in his book *Arjen estetiikka*. Naukkarinen distinguishes between two aspects of the aesthetics of clothing: One is the aspect of silence since clothing aesthetics are visually shown and words aren't necessary. This silence leaves space for viewer interpretation. Secondly, the clothes we wear have our acceptance by default since we were the ones who chose them. The aesthetic messages of clothing are quickly received and do not require written analysis.

Naukkarinen defines everyday aesthetic as having a silence that is sometimes hard or even impossible to translate for academic debate, as many aspects, like sensory feeling, cannot be fully translated into verbal language. He states that the aesthetics of everyday objects should be analysed in the way environmental arts is analysed. Everyday objects and environmental arts intersect in that both are always in relation to their surroundings and are non-verbal and quiet. The aesthetics research of both environmental arts and clothes are analysed and experienced holistically, with all the senses. "*One can think that dressing is kind of practical and functional aesthetics, the non-verbal disclosure of aesthetic values, opinions and vision*" (Naukkarinen 2011; 154).

John Hosper separates thin and thick aesthetics. Thin aesthetics are the visual, physical and perceivable aspects of the object. Thick aesthetics are the values, ideas and deeper associations related to the object (sited by Niinimäki 2014; 3).

Kirsi Niinimäki's paper Green Aesthetics in Clothing. Normative beauty in commodities, sheds light on aesthetic dimensions in clothing. Niinimäki divides these dimensions into five categories: 1) Visual and form qualities, such as colour, material and fit 2) Social dimensions like approval, experience and interaction 3) Sensory dimensions

like kinetic and tactile experience, touch and smell 4) Creativity dimensions like creativity and uniqueness of the design, fashion as art and as act 5) Properties of technical skillfulness like pattern, fit and manufacturing (Niinimäki 2014; 5).

GREEN AESTHETICS

Green aesthetics refers to the concept of linking ecological and sustainable values to aesthetics. Aesthetics and ethics cannot be separated since the common idea of what is aesthetic changes according to what one finds beautiful, ugly, appropriate, pleasing, dull, wrong, sinful etc. Both aesthetics and ethics are connected to present culture and values, and both are interpreted and exhibited through clothing. (Saito 2007.)

Yuriko Saito argues that our appreciation for things like a salt swamp is dependent on how much we know and understand about the swamp's delicate and complex ecosystem, but it is also important to have an experience of the salt swamp; walking by it binds our conceptual knowledge of its unique system together with our sensuous experience of it as a whole. Environmental determinism is the idea that the ecological or conceptual value of an artefact or an object becomes more important than what can be perceived. According to Saito, "*even with necessary incorporation of various conceptual considerations, the ultimate reference and basis of our aesthetic judgement has to be what is directly perceivable*" (Saito, 2007; 83). This obviously relates to fashion as well, since the garment has to be perceivably appealing without the possible non-visible value of sustainability.

When it comes to green aesthetics and designing new artefacts, Saito distinguishes between two approaches: Trying to introduce more sustainable practices into

the popular aesthetics, or the anti-aesthetic approach of making things based solely on principles of what is eco-friendly or sustainable. Saito sees this as a challenge and an opportunity to design products that embody values and aesthetics that are not too popular, but still recognizable (Saito 2007; 88).

AESTHETICS AND ZERO WASTE FASHION DESIGN

"It is easy to make an ugly zero waste garment"
- Timo Rissanen (TFRC)

As in any design practice, aesthetics are vital in ZWFD. The purpose of ZWFD is not only to eliminate waste, for if the focus is solely on waste elimination, the garment will most likely end up looking and feeling horrible. But as explained earlier, the ZWFD process in not as submissive as conventional design practices, and realizing precise visions for garments is difficult.

Maarit Aakko & Kirsi Niinimäki have studied the relationship of aesthetics and ZWFD in the paper 0 % Waste, 100 % Aesthetics. The objective of the paper was to look at Akko's framework of sustainable fashion from the point of view of the designer and reflect upon its relevance as concerns ZWFD. According to Aakko & Niinimäki, remaining open to the final outcome of the design process, which is typical in ZWFD, is seen as a potential way to create new aesthetics. In contrast, this might lead to looks that are baggy or too complex. Aakko & Niinimäki also state that designing very fitting shapes such as set-in sleeves might prove to be difficult. The user sees only the garment and evaluates the aesthetics that are perceivable, not the values and methods that have driven its design (Aakko & Niinimäki 2013; 10). In summary, challenges and possibilities are both important aspects of the relationship between ZWFD and aesthetics.

5, 6 & 7. McQuillan's *War/ Peace*

In the book *Shaping Sustainable Fashion*, Holly McQuillan writes about the crucial role of risk-taking. Many designers are used to realizing their vision precisely and are daunted when they cannot completely control the direction of the design. While this uncertainty is uncomfortable and perhaps even stressful, it is also very liberating and empowering. It is in this risk-taking and openness that I see great potential for creativity and aesthetics, for the design and the process. One example of this is McQuillan's conceptual work *War/Peace*. The starting point for the pattern designs were the letters in the words war and peace, in memory of the 60th anniversary of the Korean War (Ecouterre). Personally, I find this an incredibly inspiring way to approach fashion design. The garments do not stand alone: the strength of the concept comes from the patterns carrying a message in themselves. Yet this is the challenge of thin and thick aesthetics: if the user does not see the patterns, some aspects of the garment's aesthetics are lost.

AESTHETICS OF A CREATIVE PROCESS

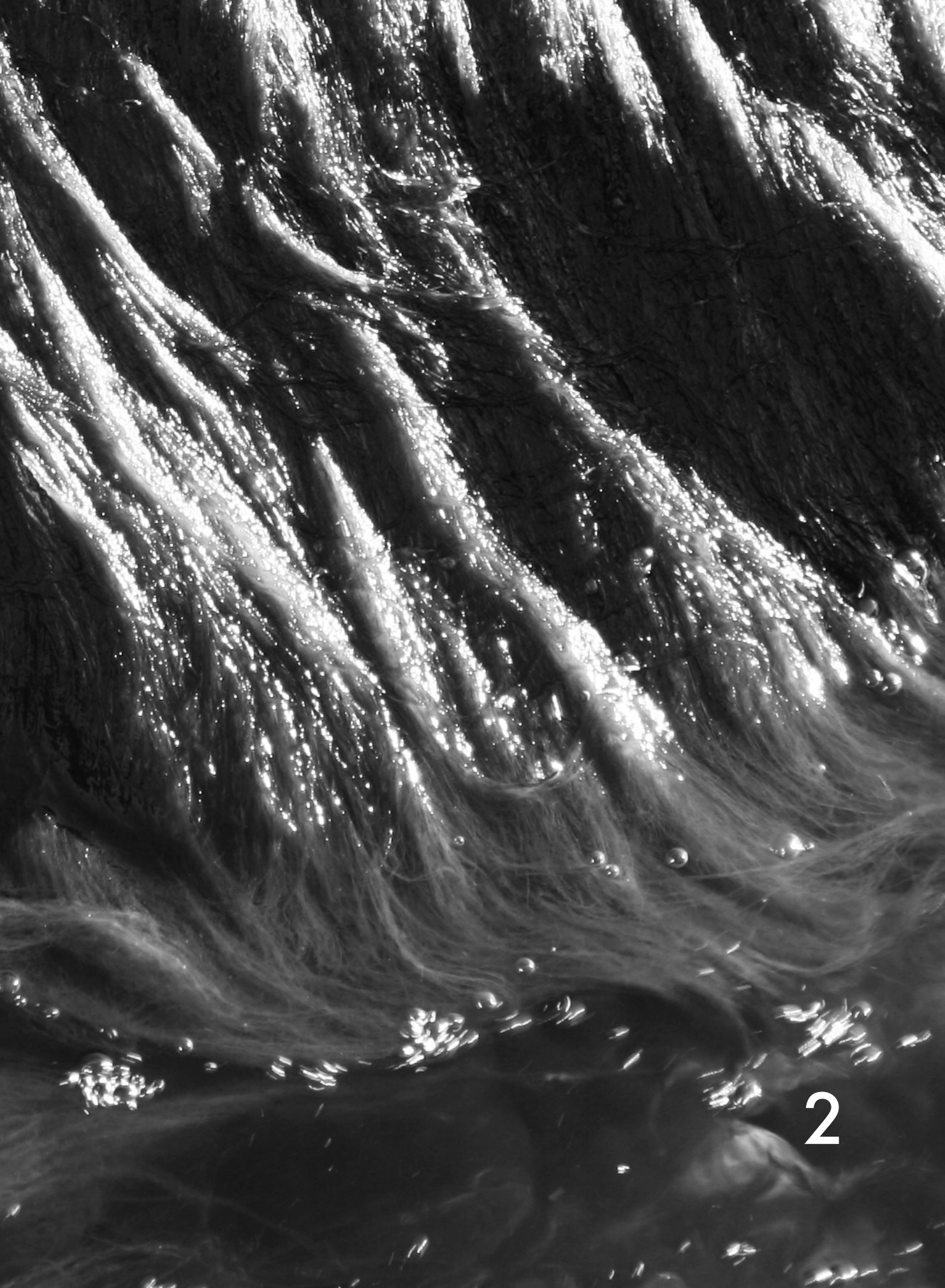
The aesthetics of objects and experiences have been widely researched and philosophized about, but the aesthetics of the act of creating hasn't been the focus of many studies. Melvin Alexenberg studies the subject in his book *Aesthetic experience in Creative Process*. He interviewed artists and scientists to gain a holistic picture of a creative process and its phases. He identified three stages of creative processes.

In the first phase, which Alexenberg calls *Messing about*, the creator feels the need to form something new and study fresh relationships with their work. At this point all possibilities are open, and the creator is scanning concepts to see what they want to work with. Playing about and just trying things out without a clear idea of the result is characteristic of this phase: through trying things out concretely, new ideas and relationships can be formed. A new range of choices appear with each decision made. Once the concepts and possible ways to execute the task have been narrowed down, the actual creating can begin. This is followed by periods of detachment and involvement, of confidence and anxiety. Self-doubt goes hand-in-hand with creating something new. Biologist Desmond Morris described this paradoxical feeling "*There is the ever-present battle between the neophilic and neophobic urges. The former drives us on to new experiences --- the latter holds us back. We are constantly in a state of shifting balance between the conflicting attractions of the exciting new stimulus and the friendly old one. If we lost our neophilia, we would stagnate. If we lost our neophobia, we would rush headlong into disaster.*" (Alexenberg 1981; 23.)

The second phase is *Joyous knowing*. In this phase, the creator recognizes the newly formed relationships and the process comes to a climax. Alexenberg distinguishes seven characteristics of the climax: biosociation, depolarization, balance, integration, emergence, correspondence and expansion. This can be described as the feeling

of everything falling into place. The outcome seems surprising and fresh, and this leads to the feelings of joy and satisfaction (Alexenberg 1981; 37).

In the last phase, *Beyond climax*, the time the creator had with the task at hand is over, and it has to be shared with the world. It comes to be in connection and dialog with other creations, and it yet again forms new relationships and meanings. This phase can manifest itself as depression or just a calm awareness of the process coming to an end (Alexenberg 1981; 46).



THE DESIGN PROCESS

DESIGN PHILOSOPHY

"Once we have learned a rule, breaking it may take us forward. Be brave"
-Timo Rissanen (Rissanen 2008; 204)

I often find myself structuring my design process over and over again, breaking rules I've been taught, making myself new rules to follow and working through them until I wish to replace those again with something else. I love conceptualizing my work, and doing so has led me to design a collection based on only rectangular patterns and the golden ratio. The harder I make it for myself, the happier I am when the process works and the results are beautiful. I could say that the process and the concepts have always interested me more than focusing on the result.

My design philosophy derives from my values. First and foremost, I think clothes should be functional, aesthetically pleasing in shape, form and touch, and made of long-lasting quality materials. I have incorporated different sustainable design theories into my practice, one of which is ZWFD. I have also adapted influences from the cradle-to-cradle theory, and thus only use pure materials in my designs so they can be recycled when they reach the end of their first life cycle (Braungart & McDonough 2008). This will become increasingly important as the technology for recycling fibres develops (VTT 2014). All in all, I wish to create meaningful, functional clothes that can be used for a long time and still have a future after their first life cycle.

INSPIRATION

"I pray for the angel of serendipity"
-Sally Mann (Cantor 2005)

The inspiration for my work is the Baltic Sea, especially green algae and bladderwrack. The work of photographer Sally Mann and the wet plate collodion photography technique were also visual starting points for the study.

The Baltic Sea and its algae inspire me visually and conceptually. Green algae (Cladophora glomerata) and bladderwrack (Fucus vesiculosus) are constantly fighting for the same living space. If the water is polluted and eutrophicated, then the green algae pushes out the bladderwrack, but if the reverse is true, and the water is clear and clean, then the bladderwrack overtakes the green algae (Leinikki et al. 2004; 34). The symbolic dualism in this relation is intriguing: neither of them is good or bad, they are just life forms trying to survive.

Sally Mann is a renowned photography artist. She is known for her use of the glass plate photography technique which dates from the late 1800s. The exposure time is long and the chemicals act in an unpredictable way, thus the results cannot be strictly guided in advance. The little imperfections made by the chemicals can be clearly seen in her work, and they make the images fascinating and alive.

In the documentary What Remains, Mann says "I pray for the angel of serendipity" (Cantor 2004). Collins English Dictionary defines serendipity as "the faculty of making fortunate discoveries by accident" (Collins 1979; 1412). This beautiful sentence relates to my work so profoundly and is what initially sparked the idea for this thesis.

9. Sally Mann's Faces with green algae

10 & 11. Above: A variety of bladderwrack. Bottom: Bladderwrack onshore

MATERIALS

For me, the fabric comes first. Before I have the fabrics, I cannot know the qualities of the material, or what garment it might work in, or the width I have to work with. The fabric itself embodies many aesthetic aspects which directly affect the aesthetics of the design: colour, texture, weight, feel etc. Indirect aesthetics are the production of the fabric, like has the cotton been picked by a child-labourer or have the dyeing chemicals been poured unprocessed to the nature. Unfortunately, these thick aesthetic aspects of fabrics are quite hard to unearth. With this collection I wanted the materials to feel soft and pleasant so I used different types of quality silk and wool. I chose natural protein fibres which can be dyed and recycled easily.

I wanted to find a way to apply coincidences and chance to the materials. I researched unconventional and uncontrollable dyeing processes and discovered rust dyeing. This technique fit perfectly into my concept, inspiration, colours and drive for sustainable practices as rust-dyeing doesn't require hard chemicals. The material is soaked in salt and vinegar water and left on an iron surface for 3-5 days. Before I discovered rust dyeing I had considered leaving the fabrics to soak in the sea with bladderwrack or other material, so I had intuitively been looking for a similar technique for some time. I did many tests with small pieces of metal I got from the metal workshop at the Kyläsaari Recycling Centre. However, dyeing bigger pieces of fabric with small pieces of metal wouldn't have been feasible, so I got bigger pieces from Niemen Romukauppa junkyard and continued my experiments from there.

Working with rust dyeing was very physical and greatly inspiring. The dyeing process doesn't only leave its mark on the fabric, but also on the iron block used for the dyeing. Every dyeing changes the block, and every time the block

13, 14, 15, 16 & 17. Rust dyeing process

is used it will dye differently due to previous dyes. The rust block has a memory of its own, and it becomes more beautiful with each dye. Every new design dyed is part of a continuum which ties the garments more closely together.

I wanted to play around with the dualism of the algae and have a reference to the wet plate photography inspiration using positive and negative colours. I carried this out with a digital print design. The print was inspired by wind on the surface of water. Digital printing as a technique is easy to control, so to add some feel of randomness, I chose not to develop the print into an all-round print. Also, I didn't clean it up too much but kept the imperfections of the original design visible.

DESIGNING

I wanted to make my design process experimental and leave space for accidents to happen. At the start of every designing session, I knew the fabric, its qualities and its width, the garment type I was designing and the pattern inspiration I would use as a starting point. These were the only parameters and restraints I had. I didn't sketch, research or visualize any garments in advance.

I wanted to use my inspiration conceptually rather than visually. My style and aesthetic is somewhat minimal and constricted, so I didn't want to use my inspiration excessively or in too literal a way. The algae inspiration can be mostly seen in the pattern designs and knit surfaces. Wet plate collodion photography influenced the colours and the overall mood.

I studied the algae and their forms. The bladderwrack grows like a bouquet, always dividing into two and then dividing again, forming y-shaped continuums. The green algae form a mat of threadlike hypha, flowing in the water, crossing (Leinikki et al. 2004). I used these two forms as the starting points for the pattern designs.

Every design session started with a decision about the fabric, garment type and pattern inspiration. Then I played around with the shapes in 1/4th scale on paper, making compositions that pleased me. This was followed by a quick Barbie-size prototyping and shaping the idea further. Then, if the idea felt good enough, I made a prototype in full scale. When all the design decisions were made and a model felt right, I made the precise pattern in full scale. This last phase is time consuming, since working with precise measurements and proportions usually raises technical problems that need to be solved.

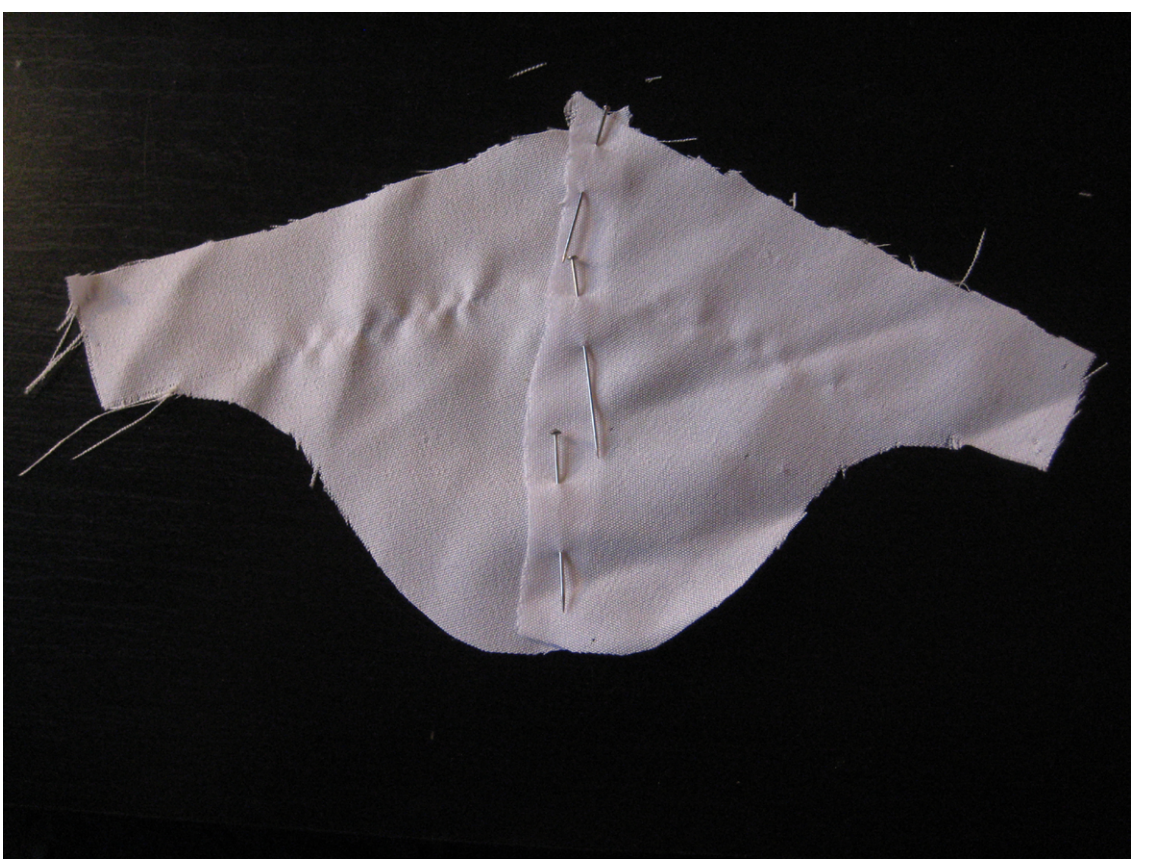
As a designer, I prefer clear lines and shapes, simplicity and functionality. For me, this means also avoiding too much decorativeness: unnecessary cuts, drapes and so on. Because the shapes are simple, proportions play a crucial role in the design. In the past I have worked a lot with geometrical shapes, but this time I wanted to challenge myself to use more curved lines.

I found that however abstract the starting point might be, the mind quickly looks for something recognizable and starts to make sense of the shapes based on previous knowledge. The risk is that this might happen before anything new is found. The fear of the unknown and the feeling of not being in control are always present in an open-ended process. It is a polarized experience: I enjoy experimenting, but I'm not beyond the reach of stress, pressure and expectations. If given the power, these negative feelings might prevent one from exploring anything. With this process I challenged myself to better endure dealing with uncertainty and the unknown.

During the process, I was able to experiment freely with different shapes and forms. Sometimes the experiments led me to make different types of garments than those I had set out to create. Sometimes I felt I was repeating something familiar and comfortable to me. Sometimes I felt I made huge breakthroughs and discoveries. At times the endless experimenting felt forced and I longed to merely work towards a certain goal. In these moments I would try to step back, relax for a bit, and then return with a different mind-set. Some patterns found their form easily in 1/4th scale, some ideas had to be tried out in full scale from the start. When working with the algae-shaped patterns started to feel stagnating, I draped forms on a mannequin.

I slowly built a collection of details, shapes and patterns that I felt related to each other and my concept. The creation of each garment was carefully documented from the algae inspiration to the evolution of the pattern and the finished garment.

To better illustrate the design process, I will briefly describe the formation of each garment.



18. Barbie-size pattern

TOP

Top, 135 cm wide silk, starting point: bladderwrack

The design of the top derived from the way bladderwrack divides. This was one of those pieces that just came together naturally without much effort. The final pattern is almost exactly like the first pattern sketch. I used digital printing in the desig of the top. The print design was inspired by wind on the surface of water. I didn't develop the print into an all-round print or clean it up much on the computer; I wanted to keep the imperfections visible. Inspired by wet plate photography, I made a black and a white version of the same top.

TROUSERS

Trousers, 120 cm wide silk, starting point: green algae

I started with the crossing wavelike lines of green algae. The intersection of those lines reminded me of the crotch area in trouser patterns. I realigned the lines to get a better fit. The patterns were biased and I had to make sense of the negative space left from the crotch pieces. I tried to add them to the sides to make the legs really wide. I made a Barbie-sketch and realized I didn't like the outcome. I questioned the diagonal layout of the pieces, and laid them out straight instead. This made the pieces narrower and they started to look more like typical trouser patterns. I made a prototype in full scale and fitted it. I was quite happy with the result, since the leg was still wide enough, the crotch area fit and they looked simple and elegant. With this model the narrow width of the fabric became a problem and I ended up designing the patterns horizontally. I felt working with trousers in 1/4th scale wasn't feasible and I quickly started working in full scale. The fit is extremely important in trousers, and this garment development process needed the most prototypes. I designed two versions of trousers based on the same patterns, and adopted the open box-pleat idea from the white under dress for the second version.

The evolution of the top

The evolution of the trousers

WHITE UNDER DRESS & BLACK UNDER DRESS

Dress, 140 cm wide silk. Starting point: bladderwrack

I wanted to use the division traits of bladderwrack more recognizably in the garments and not just in the patterns. At this point I felt stagnated working with 1/4th scale and I started draping the fabric on a mannequin. I liked the idea of a box pleat opening in the central form, but the pleat would have been too visible with this particular fabric. I discarded the pleat and used a bias cut in the central front, which I felt gave the same affect more elegantly. Inspired by wet plate photography, I designed two versions of the same idea and patterns: the white dress and the black dress.

WHITE RUST DRESS

Dress, 120 cm wide silk. Starting point: bladderwrack

The rust dresses were designed to be worn on top of the under dresses as the fabric is extremely fine and delicate. The white rust dress was another variation of the pattern used in the white under dress. I added sleeves to make the combination of the dresses more interesting. In this case, I cut the fabric into pattern pieces before rust dyeing them.

The evolution of the white under dress

The evolution of the white rust dress

BLACK RUST DRESS

Dress, 120 cm wide silk. Starting point: bladderwrack

This was the last piece I made. I dyed and then rust-dyed the whole fabric without cutting it into pieces first. I had designed this dress to be identical to the black dress that would go under it, but the fabric shrunk quite a bit during the dyeing and rusting. So, following the concept and embracing coincidences, I ended up cutting and using the fabric according to the rust-dyeing results. The fabric had three distinctive square colour blocks, and I used those as the starting point for the pattern design.

JACKET

Jacket, 188cm wide wool, starting point: green algae

The pattern of the jacket evolved from the crossing lines of green algae. The wavelike line reminded me of a bat sleeve. I followed that form and separated the central line to have more length in the sleeves. There was lots of negative space above both pieces, so I incorporated those into the front and back pieces to get more length overall. I played around with the remaining pieces and everything found its form as facing or pockets.

The evolution of the black rust dress

The evolution of the jacket

KNIT SWEATER

I wanted to have at least one knit garment in the collection to have a piece with more of a surface. I wanted the surface to have the feel of an algae mat, ever growing while still maintaining a peaceful and minimal feel. It was from this basis that I developed two cable knit surfaces. Since knit items can be fully fashioned, the designing of the pieces did not require zero waste thinking.

SHIRT

150 cm wide wool, starting point: green algae

The shirt developed from the pattern of the jacket. To get more efficient use of the fabric I rearranged the pattern pieces more closely together. This meant I had to straighten some curved lines, but I managed to retain the initial shape of the model.

SKIRT

Skirt, 150 cm wide wool, starting point: bladderwrack

The skirt followed naturally after finding the bias centre front while designing the under dresses. The skirt is another version of the same idea, and I adopted details from the trousers to make the overall look more cohesive.

The evolution of the shirt

The evolution of the skirt

OBSERVATIONS FROM THE DESIGN PROCESS

During the design process I kept a process diary and photographed every stage. I soon realized that keeping notes didn't allow for precise enough observations, so I started to record the design sessions with a dictaphone. I tried to be as specific as possible in describing the process and the decisions along the way.

Recording all my thoughts proved to be quite hard. The mind works faster than one talks, and distinguishing the different influences behind the words was troublesome. Talking out loud made me question the decisions I was making, and I felt like I was performing for someone even though the purpose of recording was just to document what I would normally do. At some point, recording the process started to influence the outcome, which was not the intention. At times I questioned if I was even designing in the traditional sense of the word, and thought that perhaps 'form giving' would be a more accurate term for my actions.

Recording the design process made me aware of my thought process and my mannerism in design, as well as the archetypes of forms I already liked and felt comfortable with like a-line silhouettes. Being aware of my mannerisms doesn't mean I should necessarily abandon them, but rather I should look at them in a critical light. After looking long and hard enough, I began to understand the some of the underlying influences behind my mannerisms and design decisions.

Listening to the recordings, I realized it is next to impossible to find out exactly what it is that affects and guides my pattern making and designing. A designer uses all of her knowledge and gained experience, which is often referred to as the silent knowledge (Anttila 2000; 58). The experience of how a certain material folds, drapes,

the kind of seams needed, how some shape works, where the pockets have to be situated etc, all rambles on and plays out in the corner of the mind. But with this material, I can make informed deductions.

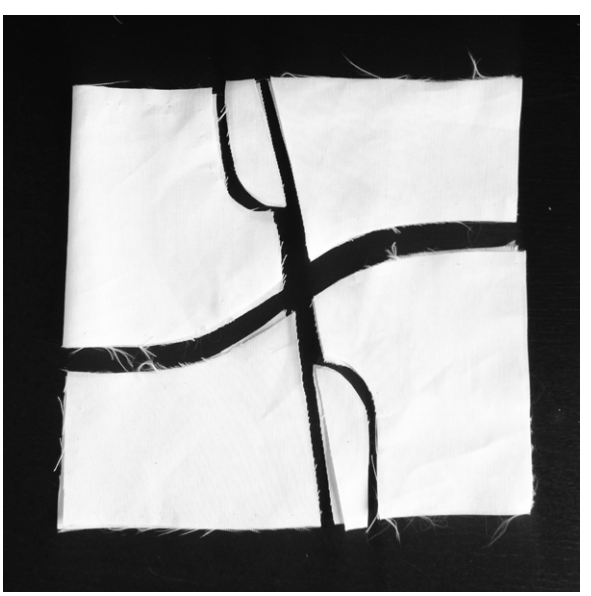
I It can be said that the fabric guided my decisions the most. I've never liked garments with too many cuts or designs that are too complicated. I prefer the garment to look easy and effortless. To me, luxury is quality materials and letting them have centre stage. This can be interpreted as respecting the materials, which manifests in my design work as avoiding creation of unnecessary seams and fuzzy decorativeness. Every line has to be justified: I tend to rather over-minimalize the pattern than make it more complicated.

The pursuit of symmetry manifests clearly in the patterns and the clothes I've designed in the past. The front and back pieces are often identical. I clearly enjoy the beauty of both the pattern pieces and the garments that come of them. Not only do I want to have a beautiful garment at the end of the process, but I also want to have an aesthetic experience while designing and making the garments. One reason for symmetry in the patterns is also the fact that I often work with only half of the fabric width, thinking of the fabric being folded. I became aware of this during the design process, and tried to challenge it by working more with the whole fabric width.

The appearance of the pattern was the starting point for most of the designs (few were draped first). Playing around with the abstract forms before defining their function made me concentrate on the appearance of the pattern itself. Experimenting, I drew shapes that pleased my eye. The patterns are the medium I work with most of the time and every line I draw carries my handwriting and vision. One observation that arises from documenting my thoughts is that the patterns have to be beautiful in themselves for me to be happy with them. For me it is important that the aesthetics go deeper than just the appearance of the cloth.

Throughout the recordings, the sentence I said most often was "*What could this be?*" This illuminates my attraction to the ZWFD process: anything could be everything. Every decision felt almost like a violent act. "*Every line brings new possibilities and every moment redefines the work. Every decision closes a million other possible directions and opens up new ones. Every decision of one pattern piece affects the other pieces. The process consists of constant action and reaction*". Within this interconnectedness of ZWFD lies its difficulty and fascinating allure. How successfully one can design with this method depends on one's willingness to make use of its interconnectedness. "*Working through a concept, you create something you have not seen from yourself before. And that's why I believe in this."*

Through this observation I have gained deeper understanding of my personal design mannerisms and aesthetics as well as the complicated nature of ZWFD and why I am so attracted to it. Working with ZWFD simply combines so many factors that I find valuable: creativeness, unpredictability, material appreciation, conceptuality, sustainability, and beauty in every step of the process.



24. Barbie-size pattern and toile

REFLECTION

I set out to discover the aesthetics of my design process, where in the process aesthetic decisions are made, and how accidents can contribute to the design. As a result of this study and design process, I feel I gained a holistic picture of aesthetics in general and also in relation to ZWFD and my own work. I've come to better understand my creative process and value it in a new way.

The aesthetics of zero waste fashion in general contain the beauty of the intention to build better and more sustainable practices within the fashion industry and an overall appreciation of the materials. The drive for creativity and an open mindset affect the aesthetics of the garments and the practice, as do the restrictions and problems related to the practice itself. The aesthetics of this particular ZWFD process are perceived through my personal experience as a designer, and, try as I may, many things get lost in translation when I try to put them into writing.

Using accidents as a design tool was very broadening. Most of these accidents can't be singled out and perceived individually, because applying them to the design is more about attitude than concrete actions. When accidents happened I tried to see where they led instead of trying to control the situation too much. One example of accidents is the shrinking of fabric and how that affected the designing of the black rust dress. I also dyed the front and back pieces of the jacket with different iron blocks and the hues turned out very different from each other, which to me made the garment look more interesting. However, there is a difference between accepting accidents when they contribute to the whole and letting the accidents determine the direction of the design at the cost of aesthetics.

The coincidental rust dyeing became one cornerstone of the design entity. I am pleased with the balance of the plain materials and the rust-dye, and I feel they contribute to each other nicely. I think it is accurate to describe the rust dyeing technique as the use of planned accidents rather than as something completely unexpected. I really enjoyed working with the rust dye, and I plan to continue working with it in the future.

Though the process was experimental and a part of the concept was not having a clear vision of the end results, that does not mean that the end results have no significance. To me, it is very important that the resulting garments are beautiful, functional and convey an overall aesthetic ambiance of the process. I feel that the garments succeed in this; they have a feeling of simplicity and ease. But since clothes are tactile object made to be worn, the true aesthetics of a garment is revealed only after experiencing them. I would like to think that these garments embody both thick and thin aesthetics. The challenge that remains is how to present the thick aesthetics behind the clothes to the user and make it meaningful.

This process has made me realize that I approach my work more like an artist than a designer. Where does one draw the line between an artistic process and a design process? In her master's thesis Luova designprosessi ja sen kehittäminen, Anni Raami writes that designing is mostly problem solving, as artistic work reflects the individual's inner world (Raami 2004; 15). These are not segregated, exclusive actions, and thus drawing the line between them is problematic and perhaps not even necessary. I feel my work is definitely within the frame of design, but to keep the design process interesting for myself, I need to approach it in an artistic, conceptual way.

I could say that I am personally intrigued by the playfulness of an open-ended process. Reflecting on Alexenberg's model of the aesthetics of a creative process, I would say

that my process resembles a combination of the phases Messing about and Joyous knowing. I chose the elements and created the concept I wanted to work with early on, but even with a general knowledge of what I was working towards, the experimental nature of the concept kept me playing with ideas long into the process.

Although this is a study of my personal design process, I hope it will spread the knowledge and understanding of the nature of zero waste fashion design, and replenish its reputation as more than just a sustainable design practice.

I wanted to have the collection photographed with wet plate collodion technique. Not many people master the technique, and finding a photographer to collaborate with was hard, but finally I found Lauri Järvinen. The photoshoot was an interesting and inspiring experience. The photograph is made directly to the aluminium panel. It needs to be sensitized, exposed and developed immediately. Finally the panel has to be dried and coated with lavender oil. All these phases take time and every picture was carefully planned in advance. The chemicals act unpredictably, and the pictures still come out uneven and full of accidents.

To emphasize the significance of the rust dyeing, I felt I still needed colour photos as well, so Kimmo Metsäranta and Lina Jelanski photographed the collection in colour.

KEY RESULTS

"Le hasard favorisé, l´esprit préparé"
Chance favours the prepared mind
-Louis Pasteur (Raami 2004)

The key findings of this study are the aesthetic influences of my ZWFD process and the aesthetics of the process itself. The observation of my design process brought to light the following themes.

INTERCONNECTEDNESS

Every decision affects everything else. One has to design the piece as a whole, not one detail at a time. The polarized feelings of challenge and fear and of excitement and adventure are ever present.

MATERIAL APPRECIATION

The material is given space to breath, avoiding decorativeness. The material and its qualities guide the process, as choosing the material is the first design decision I make. The material per se embodies the qualities that will contribute and create the overall aesthetics.

THE BEAUTY OF THE PATTERN

When working on the patterns, I do not feel like I'm working with clothes necessarily, but I am creating an independent art piece with patterns that also results in clothing. For me, the beauty of the patterns has value in itself.

PLAY

The sense of countless possibilities keeps the work interesting and exciting. Not having an end result in mind frees one of expectations and enables creative experimentation and play.

SIMPLICITY

Less is more rings true when it comes to my work. My fondness of simplicity is evident in my work; I want the garments to have only few seams and every one of them has to be justified. This is also connected to material appreciation. I like the garments to look easy and elegant, not too fuzzy or decorative. I feel most content when the pattern and the design are simple.

CONCEPT AND INSPIRATION AS THE ROADMAP

Working through and with a concept gives me a feeling of purposefulness since I am working towards one holistic entity instead of singular segment. I created a world and became completely absorbed in it and everything became connected; everything became one entity.

Other findings concern the overall comprehension of the aesthetics of my design process, which include a prolonged phase of playing about, yet always through the concept.

CONCLUSION

The objective of this thesis was to study the aesthetics of my design process, where in the process aesthetic decisions are made, and how coincidence can contribute to the design. After thoughtful reflection, I have come to understand what it is that I find so attractive about the ZWFD experience.

I found that my design process is driven by an overall desire for a holistic, conceptual aesthetic experience. I was able to identify some key factors and mannerisms behind my design decisions and look at them critically. I studied the use of coincidences and uncontrollability in the design process with the rust dyeing technique.

The collection and the process were exhibited in gallery Kalleria from the 4th to the 27th of February in an exhibition titled Tekemisen arvoista. With the exhibition I made my process visible to the audience and the ZWFD philosophy more familiar philosophy the public.

Accidental Aesthetics was the study of my design process, where concept and inspiration go hand-in-hand throughout the process, guiding its direction. I learned much about my own thought process and ways of working and designing. I gained more confidence and faith in my design process and way of working. I feel I have much I want to develop further, but most importantly much I want to continue with from here on.

Let's play

THANKS

Kirsi Niinimäki for guidance
Late Järvinen for wet plate photography
Kimmo Metsäranta & Lina Jelanski for colour photography
Eeva Heikkinen for printing
Reetta Myllymäki & Sirja Paasoja for sewing
Maija Fagerlund & Miia Oksanen for knitting
Timo Rissanen & Holly McQuillan for interviews
Avshalom Gur for guidance
Elina Laitinen & Susanna Junttila for conversations & collaboration
Aino, Jussi, Jenna, Adelaide, Riikka, Minna, Adam for help
Marko for everything

LIST OF REFECENCES

LITERATURE

Aakko, M & Niinimäki, K (2013). *0 % Waste, 100 % Aesthetics.* 10th European Academy of Design Conference - Crafting the Future

Alexenberg, M (1981). *Aesthetic Experience in Creative Process.* Ramat Gan: Bar-Ilan University Press

Anttila, P (2000). *Tutkimisen taito ja tiedonhankinta. Taito- taide- ja muotoilualojen tutkimuksen työvälineet.* Hamina: Akatiimi Oy

Braungart, M & McDonough W (2008). *Cradle to Cradle*. London: Jonathan Cape

Collins (1979). *Collins English Dictionary. The Authority on Current English.* 3rd edition. Glasgow: HarperCollins Publishers

Fletcher, K (2015). *Other Fashion Systems*. In: Fletcher K & Tham M edit. *Routledge Handbook of Sustainability and Fashion*. New York: Routledge. Pp. 15-24.

Gwilt, A & Rissanen, T (2011). *Shaping Sustainable Fashion.* London: Earthscan

Haukka, M (2011). *TrashionTrick : Naistenvaatekokoelma rekonstruoimalla ja nollajätemetodia soveltamalla.* Bachelor's Thesis. Savonia-ammattikorkeakoulu. Kulttuuriala. Muotoilun ko. Savonlinna. 82 p.

Honkanen, P (2014). *Masculin/Feminin.* Bachelor's Thesis. Lahden ammattikorkeakoulu. Muotoilun ko. Muoti-ja vaatetussunnittelu. Lahti. 65 p.

Jolkkonen, S. (2012). *Less is More. Naistenvaatekokoelma nollajätemetodia käyttäen.* Bachelor's Thesis. Turun ammattikorkeakoulu. Muotoilu. Vaatetus. Turku. 73 p.

Laitsaari, M (2013). *Zero Waste –vaatteiden suunnittelu "No More Seasons" -tuotemerkille.* Bachelor's Thesis. Mikkelin ammattikorkeakoulu. Muotoilun ko.

Leinikki, J. et al (2004). *Aaltojen alla. Itämeren vedenalaisen luonnon opas.* Jyväskylä: Gummerus kirjapaino

Leppisaari, A (2014). *Vaatteeksi kudottu. Materiaalin arvostus vaatesuunnittelun lähtökohtana.* Master's thesis. Aalto-university. Department of Design. Fashion & Collection Design. Helsinki.

McQuillan, H. (2011). *Zero-waste design practice: Strategies and Risk Taking for Garment Design.* In: A. Gwilt & T. Rissanen edit. *Shaping Sustainable Fashion.* London: Earthscan, pp. 83–97.

Naukkarinen, O (2011). *Arjen Estetiikka.* Keuruu: Otavan Kirjapaino Oy

Niinimäki, K (2011). *From Disposable to Sustainable. The Complex Interplay between Design and Consumption of Textiles and Clothing.* Helsinki: Aalto University publications series

Niinimäki, K (2014). *Green Aesthetics in Clothing. Normative beauty in commodities.* Indiana University. Artifact, volume 3

Nimkulrat, N (2015). Notes from Practice-led Design Research lecture in Design Research course. Aalto-university. Helsinki.

Obregón, C (2012). *Sustainable Fashion: from Trend to Paradigm?* Master's Thesis. Aalto-university. Department of Design. Fashion & Collection Design. Helsinki. 132 p.

Parker, L (2015). *Fashion Brands and Workers' Rights.* In: Fletcher K & Tham M edit. *Routledge Handbook of Sustainability and Fashion.* New York: Routledge. Pp. 210-24.

Pitkäranta, L (2014). *Designvaatemallisto zero waste pattern cutting –menetelmällä.* Bachelor's Thesis. Kymenlaakson ammattikorkeakoulu. Muotoilun ko. Kotka. 67 p.

Raami, A (2004). *Luova designprosessi ja sen kehittäminen.* Master's thesis. Aalto University. Medialab. Helsinki. 96 p.

Rissanen, T (2008). *Creating Fashion Without the Creation of Fabric Waste.* In: Hethorn, J & Ulasewicz, C. *Sustainable Fashion: why now? : a Conversation About Issues, Practices, and Possibilities.* Pp. 184-206

Rissanen, T (2015). *The Fashion System Through a Lens Zero Waste Fashion Design.* In: Fletcher K & Tham M edit. *Routledge Handbook of Sustainability and Fashion.* New York: Routledge

Rosenström, J (2013). *Minusta Neliö.* Bachelor's Thesis. Savonia-ammattikorkeakoulu, Kulttuuriala. Muotoilun ko. Savonlinna. 55 p.

Saito, Y (2007). *Everyday Aesthetics.* New York: Oxford University Press Inc.

Stecker, R (2005). *Aesthetics and the Philosophy of Art. An Introdution.* Oxford: Rowman & Littlefield Publishers Inc.

Thackara, J (2015). *A Whole New Cloth. Politics in the Fashion System.* In: Fletcher K & Tham M edit. *Routledge Handbook of Sustainability and Fashion.* New York: Routledge. Pp. 43-51.

Tuovinen, T (2014). *Everything not saved will be Lost. Hukkamateriaalin vähentäminen ja toiminnalliset elementit naisten casual-vaatteen kaavoituksessa.* Bachelor's Thesis. Lahden ammattikorkeakoulu. Muotoilun ko. Muoti-ja vaatetussunnittelu. Lahti. 68 p.

Yamanaka, N (1982). *The Book of Kimono.* Tokyo: Kodansha International Limited

INTERNET

Ackoff Russell L, (2004). *Transforming the Systems Movement*.
http://www.acasa.upenn.edu/RLAConfPaper.pdf (date of reference 15.2.2016)

Dezeen Magazine, interwiev of Li Endelkoort (2015) http://www.dezeen.com/2015/03/01/li-edelkoort-end-of-fashion-as-we-know-it-design-indaba-2015/ (date of reference 15.2.2016)

Ecouterre. Feature on McQuillan's *War/Peace*. http://www.ecouterre.com/holly-mcquillans-zero-waste-dress-incorporates-war-and-peace-in-its-design-literally/holly-mcquillan-war-peace-zero-waste-3/ (date of reference 18.2.2016)

Massey University (2015) http://creative.massey.ac.nz/about/our-people/school-of-design-faculty-and-staff/holly-mcquillan/ (date of reference 7.8.2015)

McQuillan, H (2010). *Zero-waste Pattern Cutting Process* https://app.box.com/shared/d6tsa5rud4 (date of reference 4.11.2015) http://hollymcquillan.com/download/

McQuillan, H (2015). Curriculum Vitae https://app.box.com/shared/q9e39fmn6jzoz5esonmm (date of reference 7.8.2015)

Parsons New School of Design (2015) http://www.newschool.edu/parsons/faculty.aspx?id=4d7a-497a-4d6a-5130 (date of reference 7.8.2015)

Rissanen, T (2013). *Zero-waste fashion design: a Study at the Intersection of Cloth, Fashion Design and Pattern Cutting* https://opus.lib.uts.edu.au/research/handle/10453/23384 (date of reference 15.10.2015)

TFRC, Textile Futures Research Centre. Interview of Timo Rissanen http://www.tfrc.org.uk/zero-waste-fashion-textile-design-2/ (date of reference 30.12.2015)

Slowfashioned (2011) Interview of Holly McQuillan. http://www.slowfashioned.com/archives/1529 (date of reference 4.11.2015)

VTT Teknologian tutkimuskeskus Oy. (2014) Using recycled fibres in creating new fabrics http://www.vtt.fi/medialle/uutiset/vtt-j%C3%A4tetekstiilist%C3%A4-voi-valmistaa-jopa-alkuper%C3%A4ist%C3%A4-parempaa-kangasta (date of reference 18.2.2016)

WtERT – Waste-to-Energy TResearhc & Technology Council. Waste Hierarchy. http://www.wtert.eu/default.asp?-Menue=14&ShowDok=25 (date of reference 20.12.2015)

DOCUMENTARY FILM

Cantor, S (2005). What Remains. Stick Figure Productions

LIST OF PICTURES

1. Green algae. Saara Jolkkonen
2. Conventional patterns and cut-off waste, ZWFD patterns. Saara Jolkkonen
3. Kimono patterns. Yamanaka, N (1982). The Book of Kimono. Tokyo: Kodansha International Limited.
4. Tessellation pattern. Holly McQuillan. http://hollymcquillan.com/images/kindestcuttesseationpattern/
5. War/peace patterns. Holly McQuillan. http://hollymcquillan.com/images/#jp-carousel-436
6. War. Holly McQuillan. http://hollymcquillan.com/images/#jp-carousel-437
7. Peace. Holly McQuillan. http://hollymcquillan.com/images/#jp-carousel-437
8. Green algae. Saara Jolkkonen
9. Faces. Sally Mann. http://sallymann.com/wp-content/gallery/faces/sally_mann_faces_12_0.jpg edited by Saara Jolkkonen.
10. Variety of bladderwrack. http://www.luontokuvateskonen.com/gallery/main.php?g2_view=core.DownloadItem&g2_itemId=781&g2_serialNumber=1
11. Bladderwrack. https://irmako.files.wordpress.com/2010/10/rantakalliot.jpg
12. Rust dyeing. Saara Jolkkonen
13. Rust dyeing process. Saara Jolkkonen
14. Rust dyeing process. Saara Jolkkonen
15. Rust dyeing process. Saara Jolkkonen
16. Rust dyeing process. Saara Jolkkonen
17. Rust dyeing process. Saara Jolkkonen
18. Barbie-size pattern. Saara Jolkkonen
19. Wet plate photography. Lauri Järvinen
20. Wet plate photography. Lauri Järvinen
21. Wet plate photography. Lauri Järvinen
22. Wet plate photography. Lauri Järvinen
23. Wet plate photography. Lauri Järvinen
24. Barbie-size pattern ad toile. Saara Jolkkonen
25-39. Colour photography. Lina Jelanski and Kimmo Metsäranta.

Cover: Rusted fabric. Saara Jolkkonen

Model Anna P / Paparazzi,
Hair and Make up Tiia Rautio

APPENDIX

AESTHETICS IN ZERO WASTE FASHION DESIGN PROCESS

SEMI-STRUCTURED INTERVIEW

The design process of zero waste fashion design is dependent on the serendipity of the process. Undiscovered creativity and solutions can be found by accident. In this light what is the role of aesthetics in this design method? When are aesthetic decisions made?

Interview Questions

Where do you start your design process? What kind of things you have in mind (a certain shape, a detail, garment type etc)?

What aesthetic decisions you make before you start designing?

How do you use inspiration? Do you think it differs from conventional fashion design process?

What guides you as you design the patterns? Do you want first to create a certain pattern and others evolve around it?

Do you let the process conduct itself? What is the role of experimentation and accidents in your design process? What is the role of intuition?

Do you have any specific tools you use in your design process?

Where in the design process you feel aesthetics take place?

What aesthetics mean to you in relation to fashion?

Do you think zero waste garments share a certain aesthetic style?

How would you describe the aesthetic attributes in zero waste fashion? In your opinion, do they differ from fashion in general?

According to Saito, people's aesthetic taste can and should be guided to support sustainable products / practises. What is your take on this? (Saito 2007, p. 75.)

What kind of feedback have you received from zero waste designs? Do the customers consider the zero waste method an important attribute in the cloth?

Do you think zero waste is sustainable fashion? What do you think of the current division of sustainable fashion vs conventional fashion?

Saito, Y 2007. Everyday Aesthetics. Oxford: Oxford University Press.